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EXAMINER

LANDAU, MATTHEW C

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 05/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/028,759

Applicant(s)

PARK ET AL. *U*

Examiner

Matthew Landau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 21-43 is/are withdrawn from consideration.

5) ☐ Claim(s) ____ is/are allowed.

6) ☒ Claim(s) 11-20 is/are rejected.

7) ☐ Claim(s) ____ is/are objected to.

8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I and Species II in Paper No. 4 is acknowledged. The traversal is on the ground(s) that it should be no undue burden on the Examiner to examine all claims in a single application. This is not found persuasive because examining an application containing claims drawn to two patentably distinct inventions and three patentably distinct species does present an undue burden on the Examiner. For example, the search for the method step of "forming a fourth insulating layer on the third insulating layer, the fourth insulating layer being a barrier layer..." is not required in the search for claims 11-20.

The requirement is still deemed proper and is therefore made FINAL.

Claims 1-10 and 21-43 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention and species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 4.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 11-15 are rejected under 35 U.S.C. 102(b) as being anticipated by the admitted prior art.

In regards to claim 11, Figures 4 and 5 of the instant application discloses an array substrate for a transfective liquid crystal display device, the substrate comprising; a gate line 25 and a data line 27 defining a pixel region by crossing each other; a switching element T at a crossing portion of the gate line and the data line; a first passivation layer 47 covering the switching element and the data line, the first passivation layer being formed of an inorganic insulating material; a reflective electrode 19a on the first passivation layer, the reflective electrode being connected to the switching element and including a transmission hole; a second passivation layer 43 on the reflective electrode, the second passivation layer being formed of organic insulating material and patterned to expose a part of the switching element; and a transparent pixel electrode 19b on the second passivation layer, the pixel electrode being formed in the pixel region and contacting the exposed part of the switching element.

In regards to claim 12, the admitted prior art discloses the reflective electrode 19a is formed of a conductive metal material including aluminum (paragraph [0007], page 3 of the instant application).

In regards to claim 13, the admitted prior art discloses the switching element is a thin film transistor including a gate electrode 32, a source electrode 33, a drain electrode 35, and an active layer 34 (paragraph [0007] of the instant application).

In regards to claim 14, the admitted prior art discloses the first passivation layer 47 is formed of silicon nitride (paragraph [0007], page 3 of the instant application).

In regards, to claim 15, the admitted prior art discloses the second passivation layer 43 is formed of an organic insulating material including benzocyclobutene (BCB) (paragraph [0007], page 3 of the instant application).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Chung et al. (US PGPub 2001/0022634, hereinafter Chung).

In regards to claims 16, 19, and 20, Figures 4 and 5 of the instant application disclose a manufacturing method of an array substrate for a transfective liquid crystal display device, the method comprising the steps of: forming a gate line 25 and a data line 27 defining a pixel region by crossing each other; forming a switching element T at a crossing portion of the gate line and the data line; forming a first passivation layer 43 covering the switching element and the data line; forming a reflective electrode 19a on the first passivation layer, the reflective electrode being connected to the switching element and including a transmission hole; forming a second passivation layer 47 on the reflective electrode, the second passivation layer patterned to expose a part of the switching element; and forming a transparent pixel electrode 19b on the second passivation layer, the pixel electrode being formed in the pixel region and contacting the exposed part of the switching element. The difference between the admitted prior art and the claimed invention is the first passivation layer being formed of an inorganic insulating material and the second passivation layer being formed of an organic insulating material. Figure 5D of Chung

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discloses a first passivation film 84 covering a switching element, an electrode 70 formed on the first passivation film, and a second passivation film 86 formed on the electrode, wherein the first film is made of silicon nitride and the second film is made of BCB (paragraphs [0020] and [0021]). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of the admitted prior art by using silicon nitride in the first passivation layer and BCB in the second passivation layer. The ordinary artisan would have been motivated to modify the admitted prior art in the manner described above for the purpose of selecting a well-known material for the first layer that has good moisture resistance (paragraph [0020]) and selecting a well-known material for the second layer that has a good transmittance (paragraph [0021]).

In regards to claim 17, the admitted prior art discloses the reflective electrode 19a is formed of a conductive metal material including aluminum (paragraph [0007], page 3 of the instant application).

In regards to claim 18, the admitted prior art discloses the switching element is a thin film transistor including a gate electrode 32, a source electrode 33, a drain electrode 35, and an active layer 34 (paragraph [0007] of the instant application).

Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Murade.

In regards to claims 16 and 19, Figures 4 and 5 of the instant application disclose a manufacturing method of an array substrate for a transfective liquid crystal display device, the

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method comprising the steps of: forming a gate line 25 and a data line 27 defining a pixel region by crossing each other; forming a switching element T at a crossing portion of the gate line and the data line; forming a first passivation layer 43 covering the switching element and the data line; forming a reflective electrode 19a on the first passivation layer, the reflective electrode being connected to the switching element and including a transmission hole; forming a second passivation layer 47 on the reflective electrode, the second passivation layer patterned to expose a part of the switching element; and forming a transparent pixel electrode 19b on the second passivation layer, the pixel electrode being formed in the pixel region and contacting the exposed part of the switching element. The difference between the admitted prior art and the claimed invention is the first passivation layer being formed of an inorganic insulating material and the second passivation layer being formed of an organic insulating material. Figure 2 of Murade discloses a first insulation layer 13 covering a switching element, an electrode 3 formed on the first passivation film, and a second insulation layer 15 formed on the electrode, wherein the first layer is made of silicon nitride (paragraph [0139]) and the second layer is made of an organic material (paragraph [0140]). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of the admitted prior art by using silicon nitride in the first passivation layer and an organic material in the second passivation layer. The ordinary artisan would have been motivated to modify the admitted prior art in the manner described above for the purpose of selecting a material for the first layer that has good lattice matching with the substrate and using a material for the second layer that can be easily smoothed.

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In regards to claim 17, the admitted prior art discloses the reflective electrode 19a is formed of a conductive metal material including aluminum (paragraph [0007], page 3 of the instant application).

In regards to claim 18, the admitted prior art discloses the switching element is a thin film transistor including a gate electrode 32, a source electrode 33, a drain electrode 35, and an active layer 34 (paragraph [0007] of the instant application).

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of Murade as applied to claim 16 above, and further in view of Gu.

A further difference between the admitted prior art and the claimed invention is the organic insulating material is BCB or an acrylic resin. Figure 2 of Gu discloses an organic insulating layer 29 made of BCB (column 4, lines 15-25). In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of the admitted prior art by using a BCB as the organic material. The ordinary artisan would have been motivated to modify the admitted prior art in the manner described above for the purpose of selecting a well-known, photo-imageable material.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

The examiner can normally be reached from 8:00 AM-4: 30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



**EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**

Matthew C. Landau

Examiner

May 2, 2003